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The wallaby menace in the Kimberleys

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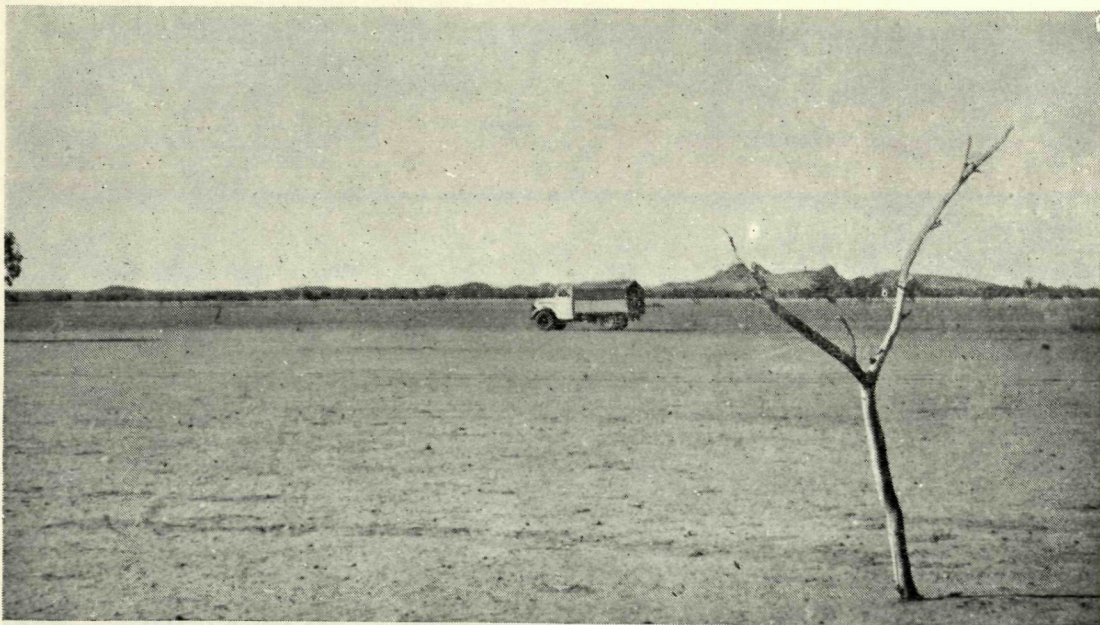


Fig. 1.—Portion of a Kimberley Station showing the results of a prolonged drought period.

THE WALLABY MENACE IN THE KIMBERLEYS

CONTROL EXPERIMENTS, JUNE–OCT. 1953

By A. R. TOMLINSON, Chief Vermin Control Officer, C. D. GOODING,
Vermin Control Research Officer, and L. A. HARRISON,
Vermin Control Research Technician.

COUNTLESS thousands of Sandy Wallabies (*Macropus agilis*) have long been a menace to the pastoral industry in the Kimberleys. These animals eat almost the same foods as the sheep and cattle and have substantially reduced the stock-carrying capacity of the river-frontage areas where they are found in the greatest numbers. Research into control methods was commenced in 1952 when Mr. L. A. Harrison undertook some investigations designed to ascertain the best line of approach to a poisoning campaign.

Some preliminary experiments were attempted using lures and supplements, but because of the inconclusive nature of the results they were all repeated, this time under controlled conditions. Seasonal conditions in this period were similar to those experienced in the previous season. Conditions up until March, 1954, were still considered as drought.

Besides the work started last year, a certain amount of purely ecological work was undertaken. This was confined to sexing, weighing and recording of "joeys" and a little observational data on distribution.

MECHANICAL FACTORS

A machine was designed and built for easy manufacture of baits. This consisted of a 3-5 H.P. air-cooled petrol engine connected to a poultry mash mixer by means of V-belts. Through a hole in the bottom of this machine the moist bran and polard mixture fell into the hopper of a worm-driven pellet-former, which had originally been manufactured for laying rabbit poison. From the extrusion hole in the end of the pellet former, pellets emerged at the rate of 140 per minute. Four different diameters of pellets were

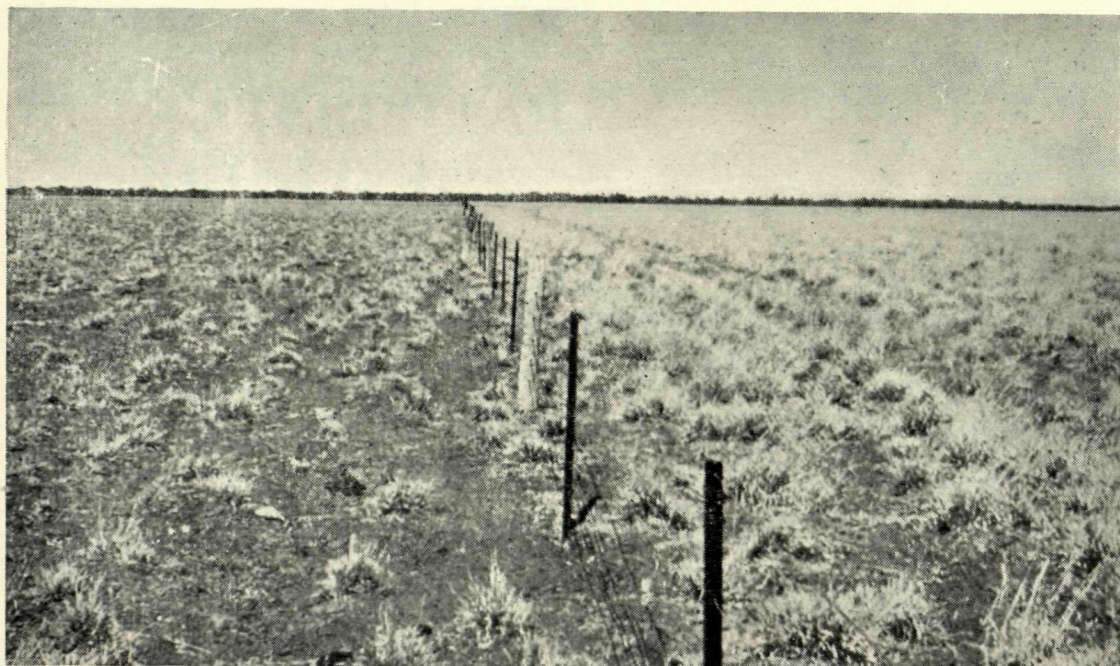


Fig. 2.—The fence-line dividing two properties. Note effects of overgrazing on the left of the picture.

combined with three lengths giving a range of 12 different shapes and sizes. From this assortment of pellets the wallabies consistently chose those approximately 1 in. long and $\frac{3}{8}$ in. in diameter. The larger pellets were also consumed, but the 1 in. by $\frac{3}{8}$ in. were the most economically practicable. This pellet size was used in all later experiments.

MIXTURE PROPORTIONS

As a basis on which to commence work a mixture of 2 parts of pollard: 1 of bran: 1 of water (by volume) was chosen and used in all early experiments. Later experience prompted a change of the mixture to 1 part of pollard; 2 parts bran and 1 part of water.

This, which was subsequently termed the "soft" pellet—the original mixture being termed "hard"—proved much more satisfactory for the following reasons.

- (i) Being softer, the wallaby had a better chance of consuming the pellet before tasting the poison.
- (ii) The "soft" pellet dried more quickly with less internal fermentation. The "hard" pellet was

apt to cake hard on the outside, leaving the inner portions moist and liable to fermentation.

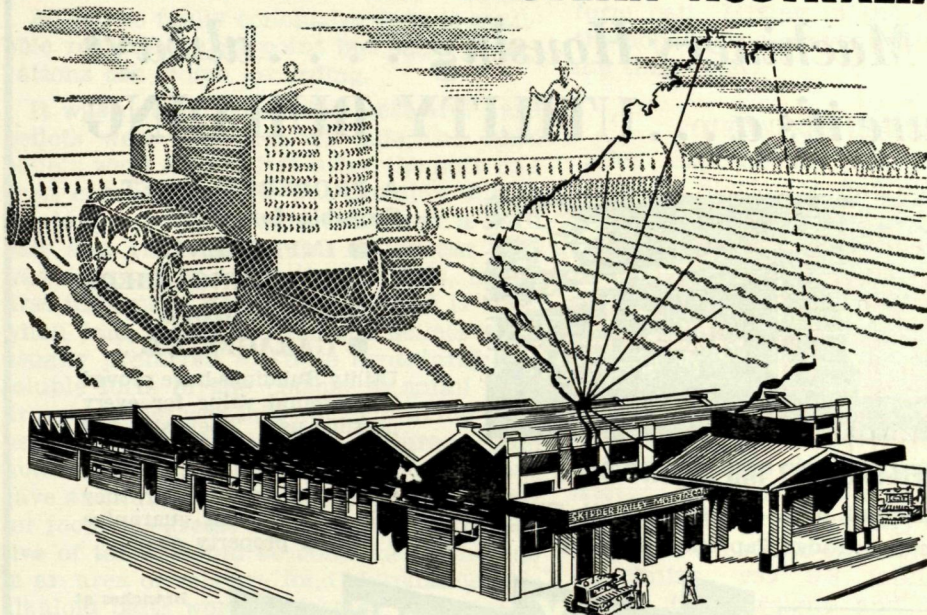
- (iii) The ideal bait should be one that crumbles readily under the conditions experienced in the "Wet." Following tests in dropping from a standard height after exposure to humid conditions, the "soft" pellet mixture was adopted and used in all subsequent work.

The "hard" pellet, when exposed to humid conditions, became covered with moulds and flyblown but did not entirely disintegrate. (If hand-making of pellets is practised, the "hard" formula may be more suitable, but the "soft" mixture is definitely better if the pellets are machine-made.)

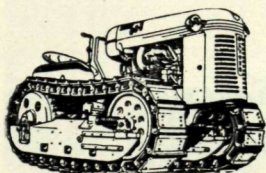
LURES

All the lures and supplements examined last year were again tested, with the addition of eucalyptus. In the quantities tried, aniseed, linseed oil, linseed meal and meatmeal were definitely repellant to wallabies, while dicalcic phosphate, rhodium, oil of cymini, amyl acetate, chaff and eucalyptus proved of no benefit in increasing consumption of baits.

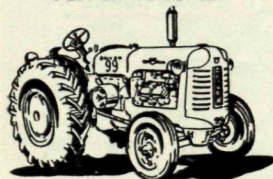
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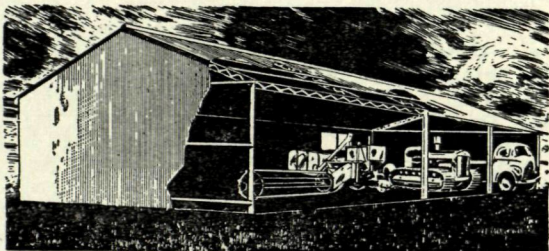
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POISON REPELLANCY (STRYCHNINE)

As yet no really conclusive data is available regarding this point but some observations are worth recording.

It was noticed that when soft and hard pellets were laid side by side the hard pellets were always left after the soft had been consumed. This was possibly due to the longer period required to chew a hard bait and the subsequent bitterness that was detected by the animal. That, is the first important point. The second is that, when laid together, alkaloid pellets were usually preferred to those containing the soluble form of the poison. A small confirmatory test was laid out embracing both heavily and sparsely populated areas. The number of baits laid was only small but gave an indication that, where competition for food was great, then all baits, irrespective of taste, would be consumed, whereas in an area of relative food abundance, the alkaloid baits were preferred. As there is very little difference in price, it appears reasonable to recommend that the alkaloid (pure) be used in preference to soluble strychnine. When procurable, powdered strychnine is easier to handle than crystals and should always be used. It disperses

much more easily and gives a more uniform bait. Mixing in the dry state, with the pollard, is a convenient way of achieving this result.

POISON REQUIREMENTS

Pen experiments were conducted at Quanbun Station to find out the quantity of poison needed to kill this species of wallaby. (This is referred to as the Minimal Lethal Dose or M.L.D.). The method of doing this was to insert a length of metal tubing into the oesophagus of the animal and through the centre of this tubing to lower a piece of fine rubber tubing into the alimentary tract. A hypodermic syringe was then connected to the rubber tube and the requisite dose administered. All doses were regulated according to body weight. A summary of our findings was that (in round figures), the M.L.D. of strychnine was 0.8 milligrammes per pound body weight and the M.L.D. of "1080" was 0.2 mgms. per pound body weight.

Strychnine is the only one of these poisons at present available to the general public. To convert the above figures to a practical basis—



Fig. 3.—Erecting a trapping yard at a mill to obtain wallabies for pen experiments.



Fig. 4.—The baitmaking machine on the right with baits spread out to dry before being bagged for distribution.

Mix 1 oz. of strychnine for every 1,720 pellets made. Each pellet then contains the lethal dose of $\frac{1}{4}$ gr. (calculated for an average animal of 20 lb. weight).

WHOLESALE POISONING

Several attempts were made at "wholesale" poisoning. Two of the more successful of which are documented here.

Ram Paddock, Quanbun Station.

In order to use up a lot of "free feed" (unpoisoned) pellets on hand, "hard" pellets were used in this experiment. Visual counts of wallabies were made from a vehicle when laying free feed pellets.

September 7—382 wallabies counted, 10,000 free feed pellets laid.

September 10—No count, 20,000 free feed pellets laid.

September 12—523 wallabies counted, Nil.

September 15—No count, 20,000 free feed pellets laid.

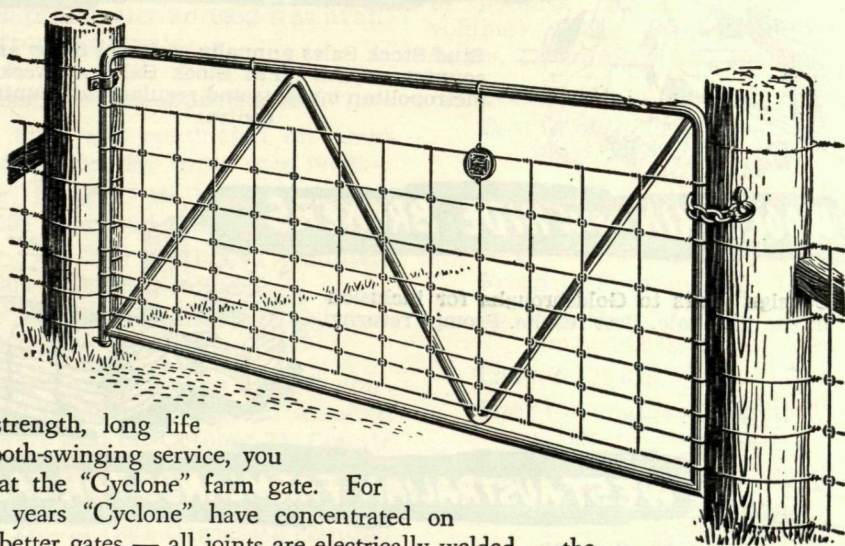
September 16—877 wallabies counted, 3,000 poisoned baits and 5,000 free feed laid.

The poisoned pellets each contained $1\frac{1}{2}$ grains of soluble strychnine. The idea of laying "free feed" pellets out with the poisoned baits was merely to cut down on cost of strychnine which, with $1\frac{1}{2}$ grains to the pellet amounted to an appreciable sum. The results of this trial are most interesting and illustrate some of the points mentioned before.

A lot of the "hard" poisoned pellets remained after eight days but none of the "free feed" pellets. A large percentage of the poison pellets had been nibbled and rejected. A wallaby count taken on September 19 showed 368 still in the area. The area was poisoned again on October 4 using "soft" $\frac{1}{2}$ -grain alkaloid baits, and even though the animals had been partially educated against baits their numbers were further reduced to 43. In this experiment the following factors were unsuitable and the wallabies reacted accordingly:—

- (a) Hard and not soft pellets were used.
- (b) Soluble and not alkaloid strychnine was used.
- (c) The concentration of poison was too high ($1\frac{1}{2}$ grs. to the bait).

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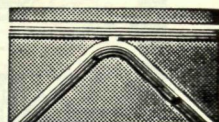
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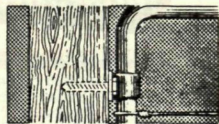
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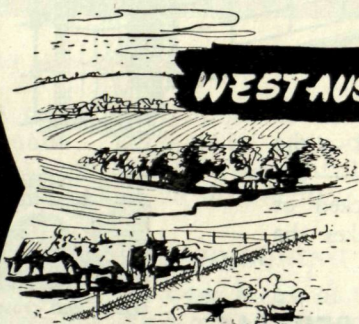
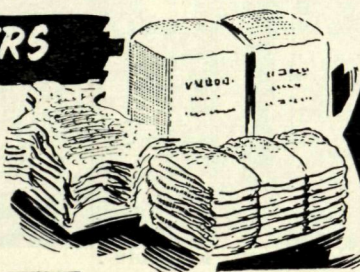


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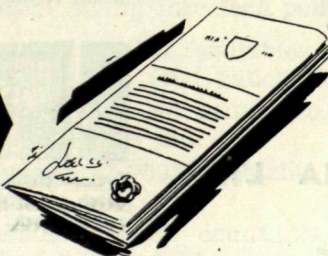
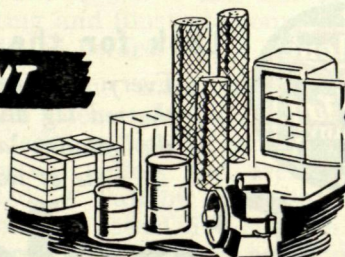


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Then, when conditions were made acceptable, the wallabies took the baits well and a big reduction followed. The total overall kill achieved during this trial was (calculated on the largest pre-poisoning figure) 95 per cent. Results of this magnitude are not generally expected using strychnine poison. This illustrates the control exerted on poison consumption by the amount of feed present at the time. (In this case practically no feed was available apart from the baits).

Alexander Island—Quanbun Station.

A second trial was conducted on Alexander Island employing three free feeds—

October 14—396 wallabies counted,
25,000 free feed laid.

October 17—303 wallabies counted,
18,000 free feed laid.

October 19—235 wallabies counted,
20,000 free feed laid.

Five thousand poison baits of soft consistency, each containing $\frac{1}{2}$ grain alkaloid strychnine were laid on October 21. Counts made on successive days following this, showed a gradual decline—

October 22—74 (201 Carcasses counted
from vehicle).

October 23—30.

October 24—17.

As far as could be ascertained, baits, which had been thrown from a moving vehicle at random, had all been consumed. There figures, when calculated on the largest pre-baiting count, illustrate a kill of over 95 per cent. It seems then that a satisfactory control does exist in the

form of “soft” $\frac{1}{2}$ -grain alkaloid strychnine baits. However, it is felt that further testing over a widespread area, involving varying numbers of free feeds is still necessary.

COST OF BAIT MAKING

Four hundred and twelve lb. of wet mash was made up by machine during one test period. This consisted of 152 lb. bran, 109 lb. pollard, 151 lb. of water (2:1:1 by volume). The machine was run for 3 hours, 11 minutes and made 12,300 baits.

Cost of 152 lb. bran (ex Perth)=31.14s.

Cost of 109 lb. pollard (ex Perth)=22.49s.

Cartage to wharf Fremantle (10s. per ton)=1.17s.

Handling charges (both ends)=3.46s.

Freight (Fremantle to Derby)=12.00s.

Cartage Derby to site (average £6 per ton)=14.04s.

Labour=22.62s.

Fuel for engine (3 hours 11 minutes)=1.2s.

Depreciation on machine=2.71s.

Total Cost=110.85s.

=0.108d. per pellet

Cost of $\frac{1}{2}$ gr. strychnine per pellet
=0.163d.

(13s. per oz.)

Total Cost per bait=0.272d.

It is hoped to continue this work in the coming season. The main programme will consist of wholesale baiting of extensive areas and thorough testing of the above finding from the point of view of practical application by the pastoralist.

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Arrangements have been made for the compilation of a comprehensive index to be incorporated in the December issue—a feature which will greatly enhance the value of the Journal as a work of reference.